REMARKS

This amendment is filed in response to the final Office Action dated March 3, 2008. In view of these amendments and remarks, this amendment should be entered, the application allowed, and the case passed to issue. No new matter or considerations are introduced by this amendment, which clearly places this application in condition for allowance. Claims 7 and 13 are amended to correct the informalities noted by the Examiner.

Claims 1-8, 10-14, and 16-20 are pending in this application. Claims 1-8, 10-14, and 16-20 are rejected. Claims 7 and 13 are amended in this response.

Claim Rejections Under 35 U.S.C. § 112

Claims 7 and 13 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite because they recite methods other than sputtering. This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested.

Claims 7 and 13 have been amended to correct the informalities noted by the Examiner. It is submitted that the claims fully comport with the requirements of 35 U.S.C. § 112.

Claim Rejections Under 35 U.S.C. § 103

Claims 1-8, 10-14, 16, and 18-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Zejda (US 5,228,968) in view of Maeda et al. (US 5,620,523) and Ando et al. (US 6,458,253). This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested. The following is a comparison between the present invention, as claimed, and the cited prior art.

An aspect of this invention, per claim 1, is an apparatus adapted for treating or processing at least one substrate/workpiece in a plasma comprising a chamber defining an interior space and means for generating a plasma in the interior space of the chamber. Mounting means are adapted

for positioning at least one substrate/workpiece in the interior space of the chamber for receiving treatment in the plasma. A gas supply means injects gas(es) into the interior space of the chamber comprising an inlet portion extending exteriorly of the chamber, an outlet extending into the chamber and including a pair of arcuately-shaped tubular gas outlet portions for injecting gas(es) into the interior space, and means for applying a bias potential to the gas supply means for suppressing plasma formation at the outlet portions. The means for applying a bias potential is electrically isolated from the means for generating a plasma. The apparatus comprises a spaced-apart pair of cathode/target assemblies and the mounting means positions at least one substrate/workpiece in the space between the pair of cathode/target assemblies, and the arcuately-shaped tubular gas outlet portions are positioned between the spaced-apart pair of cathode/target assemblies.

Another aspect of the invention, per claim 11, is a method of treating or processing at least one substrate/workpiece in a plasma comprising steps of providing an apparatus comprising a chamber defining an interior space and including means for generating a plasma within the interior space. At least one substrate/workpiece is mounted or positioned in between a spaced-apart pair of cathode/target assemblies in the interior space of the chamber. Gas(es) are injected between the spaced-apart pair of cathode/target assemblies by means of an electrically isolated gas supply means having a pair of arcuately-shaped tubular gas outlet portions. A plasma is generated in the interior space of the chamber via the means for generating a plasma. A bias potential is applied to supply means to suppress plasma formation at the outlet portions, and the at least one substrate/workpiece is treated or processed in the plasma. The gas supply means is electrically isolated from the means for generating a plasma.

The Examiner asserted that Zejda substantially teaches the claimed apparatus and method. The Examiner acknowledged that Zejda does not disclose means for generating a plasma in the interior space of the chamber, an inlet portion extending exteriorly of the chamber, a pair of arcuately shaped tubular gas outlet portions, means for applying a bias potential to the gas supply means, wherein the means for applying a bias potential is electrically isolated from the means for generating a plasma. The Examiner averred that apparatus of Zejda would inherently require a power supply means to generate a plasma and that Ando et al. disclose means for generating plasma. The Examiner further maintained that Ando et al. teach an inlet portion extending exteriorly of the chamber. The Examiner relied on Maeda et al. for the teaching of arcuate gas supply means. The Examiner concluded that it would have been obvious to combine the teachings of Zejda, Maeda et al., and Ando et al. in order to allow the depositing of a uniform film with little damage.

As disclosed in the present specification, the present invention suppresses the premature ionization of inert gases (plasma formation), the erosion of the gas delivery system, and the creation of the decomposed species adjacent the gas delivery system (page 10, lines 4-26).

The combination of Zejda, Maeda et al., and Ando et al. do not suggest the claimed apparatus adapted for treating or processing at least one substrate/workpiece in a plasma and method of treating or processing at least one substrate/workpiece in a plasma.

The combination of Zejda, Maeda et al., and Ando et al. does not suggest a gas supply means for injecting gas(es) into the interior space of the chamber comprising an outlet extending into the chamber and including a pair of arcuately-shaped tubular gas outlet portions for injecting gas(es) into the interior space, and the arcuately-shaped tubular gas outlet portions are positioned between the spaced-apart pair of cathode/target assemblies, as required by claim 1; and the step

of injecting gas(es) between the spaced-apart pair of cathode/target assemblies by means of an electrically isolated gas supply means having a pair of arcuately-shaped tubular gas outlet portions, as required by claim 11.

It would not have been obvious to one of ordinary skill in the art to combine Maeda et al. with Ando et al. and Zejda in the manner proposed by the Examiner. Ando et al. and Zejda are directed to sputtering apparatuses and processes, while Maeda et al. is directed to a chemical vapor deposition apparatus and method. The sputtering apparatuses and methods of Ando et al. and Zejda are very different, and they are even further different from the CVD apparatus and method of Maeda et al. It would not have been obvious to one of ordinary skill in this art to modify the Zejda apparatus into a configuration disclosed by Ando et al. and Maeda et al. Modifying the Zejda apparatus into the Ando et al. and Maeda et al. configurations, even if it was obvious to do so, and Applicant maintains it is not, would significantly alter the functionality of the Zejda apparatus. For example, in Zejda the cathodes (6, 7) face the substrate (11), while as shown in Fig. 7, the targets (13) of Ando et al. do not face the substrate and a shutter (17) is between the anode (71) with the substrate (70) and the cathode. Maeda et al., because it is directed to CVD does not have targets. It is not seen how Zejda could be combined with Ando et al. and Maeda et al. and still retain the benefits and features of Zejda. For example, if Zejda is combined with Ando et al. to provide the pair of cathode/target assemblies and injecting a gas into the space between the pair of cathode/target assemblies, the cathode/target assemblies would directly face the substrate and the benefits of the shutter would be lost. Further, because Maeda et al. is directed to CVD the gas introduced via the gas injectors and the gas injectors themselves, perform a completely different function than the gas and injectors in Zejda and Ando et al.

Clearly, Maeda et al. is in different field of endeavor (CVD), than Zejda, Ando et al., and the present invention (sputtering). "In order to rely on a reference as a basis for rejection of applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oeticker,* 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). Maeda et al. is neither directed to the field of Applicants' endeavor, sputtering, nor pertinent to the problem with which Applicants were concerned, premature ionization of inert gases (plasma formation), the erosion of the gas delivery system, and the creation of the decomposed species adjacent the gas delivery system.

Obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge readily available to one of ordinary skill in the art. *In re Kotzab*, 217 F.3d 1365, 1370 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). There is no suggestion in Zejda, Ando et al., and Maeda et al. to modify the sputtering apparatus and method of Zejda to include gas supply means for injecting gas(es) into the interior space of the chamber comprising an outlet extending into the chamber and including a pair of arcuately-shaped tubular gas outlet portions for injecting gas(es) into the interior space, and the arcuately-shaped tubular gas outlet portions are positioned between the spaced-apart pair of cathode/target assemblies, as required by claim 1; and the step of injecting gas(es) between the spaced-apart pair of cathode/target assemblies by means of an electrically isolated gas supply means having a pair of arcuately-shaped tubular gas outlet portions, as required by claim 11; nor does common sense dictate the Examiner-asserted

modification. The Examiner has not provided any evidence that there would be any obvious benefit in making the asserted modification of Zejda. *See KSR Int'l Co. v. Teleflex, Inc.*, 500 U.S. ____ (No. 04-1350, April 30, 2007) at 20.

The mere fact that references can be modified does not render the resulting combination obvious unless the prior art also suggests the desirability of the modification. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Zejda, Ando et al., and Maeda et al. do not suggest the desirability of modifying the Zejda apparatus and method, as required by claims 1 and 11.

The requisite motivation to support the ultimate legal conclusion of obviousness under 35 U.S.C. § 103 is not an abstract concept, but must stem from the applied prior art as a whole and realistically impel one having ordinary skill in the art to modify a specific reference in a specific manner to arrive at a specifically claimed invention. *In re Deuel*, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995); *In re Newell*, 891 F.2d 899, 13 USPQ2d 1248 (Fed. Cir. 1989). Accordingly, the Examiner is charged with the initial burden of identifying a source in the applied prior art for the requisite realistic motivation. *Smiths Industries Medical System v. Vital Signs, Inc.*, 183 F.3d 1347, 51 USPQ2d 1415 (Fed. Cir. 1999); *In re Mayne*, 104 F.3d 1339, 41 USPQ2d 1449 (Fed. Cir. 1997). There is no motivation in Zejda, Ando et al., or Maeda et al. to modify the sputtering apparatus and method of Zejda so that includes a gas supply means for injecting gas(es) into the interior space of the chamber comprising an outlet extending into the chamber and including a pair of arcuately-shaped tubular gas outlet portions for injecting gas(es) into the interior space, and the arcuately-shaped tubular gas outlet portions are positioned between the spaced-apart pair of cathode/target assemblies, as required by claim 1; and the step of injecting gas(es) between the spaced-apart pair of cathode/target assemblies by means of an

electrically isolated gas supply means having a pair of arcuately-shaped tubular gas outlet portions, as required by claim 11.

In rejecting a claim under 35 U.S.C. § 103, the Examiner is required to discharge the initial burden by, *inter alia*, making **"clear and particular"** factual findings as to a **specific understanding** or **specific technological principle** which would have **realistically** impelled one having ordinary skill in the art to modify an applied reference to arrive at the claimed invention based upon facts, -- not generalizations. *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 57 USPQ2d 1161 (Fed. Cir. 2000); *Ecolochem Inc. v. Southern California Edison, Co.*, 227 F.3d 1361, 56 USPQ2d 1065 (Fed. Cir. 2000); *In re Kotzab*, *supra*; *In re Dembiczak*, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999). That burden has not been discharged, as the Examiner has provided no factual basis for modifying the Zejda sputtering apparatus or method to include gas supply means for injecting gas(es) into the interior space of the chamber comprising an outlet extending into the chamber and including a pair of arcuately-shaped tubular gas outlet portions for injecting gas(es) into the interior space, and the arcuately-shaped tubular gas outlet portions are positioned between the spaced-apart pair of cathode/target assemblies, as required by claim 1; and the step of injecting gas(es) between the spaced-apart pair of cathode/target assemblies by means of an electrically isolated gas supply means having a pair of arcuately-shaped tubular gas outlet portions, as required by claim 11.

The only teaching of the claimed sputter deposition apparatus and method is found in Applicants' disclosure. However, the teaching or suggestion to make a claimed combination and the reasonable expectation of success must not be based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Claim 17 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Zejda et al. in view of Maeda et al. and Ando et al. and further in view of Suzuki et al. (U.S. Pat. No. 6,627,253). This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested.

The Examiner acknowledged that Zejda, Ando et al., and Maeda et al. do not disclose the claimed reactive sputtering of a ferromagnetic target material in an oxygen-containing plasma. The Examiner relied on the teachings of Suzuki et al. to provide this step and asserted that it would have been obvious to combine Suzuki et al. with Zejda, Maeda et al., and Ando et al.

The combination of Suzuki et al. with Zejda, Maeda et al., and Ando et al., however, does not suggest the claimed apparatus and method because Suzuki et al. do not cure the deficiencies of Zejda, Maeda et al., and Ando et al. Suzuki et al. do not suggest a gas supply means for injecting gas(es) into the interior space of the chamber comprising an outlet extending into the chamber and including a pair of arcuately-shaped tubular gas outlet portions for injecting gas(es) into the interior space, and a spaced-apart pair of cathode/target assemblies and the mounting means positions at least one substrate/workpiece in the space between said pair of cathode/target assemblies, and the arcuately-shaped tubular gas outlet portions are positioned between the spaced-apart pair of cathode/target assemblies, as required by claim 1; and the steps of mounting/positioning at least one substrate/workpiece between a spaced-apart pair of cathode/target assemblies in the interior space of the chamber, and injecting gas(es) between the spaced-apart pair of cathode/target assemblies by means of an electrically isolated gas supply means having a pair of arcuately-shaped tubular gas outlet portions, as required by claim 11.

The dependent claims are allowable for at least the same reasons as the independent claims from which they depend and further distinguish the claimed apparatus and method.

In view of the above remarks, Applicant submits that this amendment should be entered, the application allowed, and the case passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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